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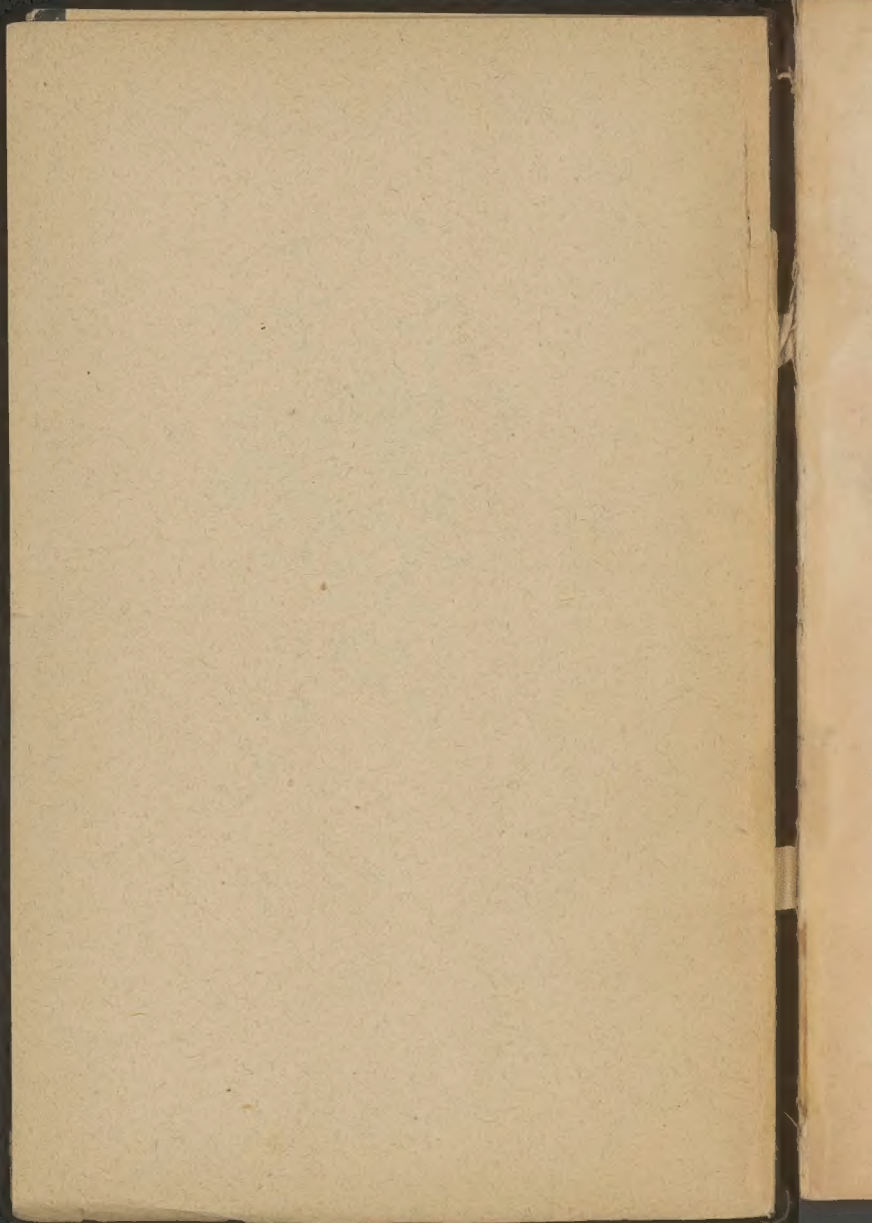
Dr. Gottlieb Adler 9445

Hydrostatik u. Hydrodynamik

H. S. H. Rindschowski

F. POLLY, IV. KAROLINENG. 23

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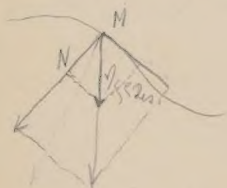
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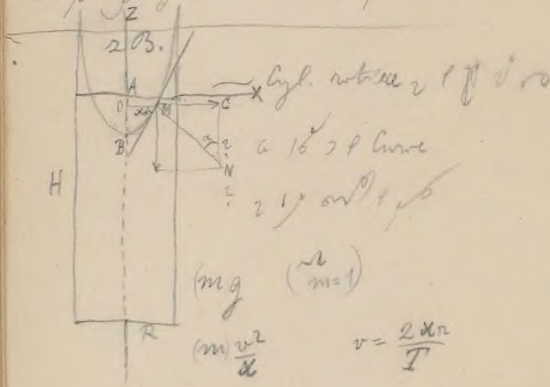
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$$(mg) \left(\frac{r}{m=1} \right)$$

$$(m) \frac{v^2}{x}$$

$$v = \frac{2 \pi n}{T}$$

$$= \frac{4 \pi^2}{T^2} x$$

$$\frac{dx}{dt} = T_1 x = \frac{mc}{g} = \frac{4 \pi^2}{g T^2} x$$

$$z = \frac{2 \pi^2}{g T^2} x^2 + K$$

Parabel

$$z=0 \quad z=K \quad K=0.03$$

22/09/2017

4

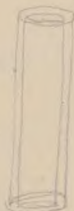
AB = ?

evol. of ϕ in

$\pi n^2 H$



$2\pi x dx, 2$



$$\begin{aligned} V &= 2\pi \int_0^n x dx = 2\pi \int_0^n \left[Kx + \frac{2\pi^2 x^3}{gT} \right] dx = \\ &= 2\pi \left[\frac{x^2}{2} + \frac{2\pi^2}{gT} \frac{x^4}{4} \right]_0^n = \\ &= K\pi^2 n + \frac{4\pi^3}{gT} \frac{n^4}{4} \end{aligned}$$

$$K\pi^2 n + \frac{\pi^3 n^4}{gT} = \pi n^2 H$$

$$K + \frac{\pi^2 n^2}{gT} = H$$

$$H - K = \frac{\pi^2 n^2}{gT}$$

$$\underbrace{AB}_{AB} = \frac{\pi^2 n^2}{gT}$$

22/09/2017

203



22/09/2017; 21/09/2017
evol. of ϕ in
evol. of ϕ in
evol. of ϕ in

K=0.8

2.2 $\{P_L\} \rightarrow \{P_R\} [470]$



$\text{e.g. } p = f(x, y, z)$ or $\nabla p = 0$
 $154793, 1172$

$$\int \rho h \gamma h^2 + dx dy \cdot \mu$$
$$- p' dx dy$$
$$dx dy [p - p']$$
$$\mu = f(x, y, z)$$
$$\begin{aligned} p' &= f(x, y, z + dz) \\ p' &= f(x, y, z) + \frac{\partial f}{\partial z} dz \\ &= p + \frac{\partial p}{\partial z} dz \end{aligned}$$
$$p - p' = - \frac{\partial p}{\partial z} dz$$
$$Z = - \frac{\partial \mu}{\partial z} dx dy dz$$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$$X = \epsilon X$$

$$Y = \epsilon Y$$

$$Z = \epsilon Z$$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

$\lambda = \frac{1}{2} \pi$

Z

$$Z = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2}$$

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$$P = \frac{1}{\sqrt{2\pi}}$$

$$Z = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2}$$

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Let $u = x^2 + y^2 + z^2$ and $v = x^2 + y^2$

Then $u = 1$ and $v = 1$ are the equations of the surfaces

$S_1 = \{x^2 + y^2 + z^2 = 1\}$ and $S_2 = \{x^2 + y^2 = 1\}$

The intersection of S_1 and S_2 is the curve C defined by

$$C = \{x^2 + y^2 + z^2 = 1, x^2 + y^2 = 1\}$$

which is a circle of radius 1 in the plane $z = 0$.

The tangent plane to S_1 at the point $(1, 0, 0)$ is

$$x = 1$$

and the tangent plane to S_2 at the point $(1, 0, 0)$ is

$$y = 0$$

Therefore the normal vector to the surface at $(1, 0, 0)$ is

$$\vec{n} = \vec{i} \times \vec{j} = \vec{k}$$

and the area element dA is

$$dA = \sqrt{1 + 0 + 0} \, dx \, dy = dx \, dy$$

Since the curve C is a circle of radius 1 in the plane $z = 0$,

$$C = \{(x, y, 0) \mid x^2 + y^2 = 1\}$$

the line integral of the vector field \vec{F} over C is

$$\oint_C \vec{F} \cdot d\vec{r} = \oint_C (x^2 + y^2 + z^2) \, dx \, dy \, dz$$

Since $z = 0$ on C , the integral simplifies to

$$\oint_C (x^2 + y^2) \, dx \, dy$$

which is the area of the circle C in the plane $z = 0$.

$$\oint_C (x^2 + y^2) \, dx \, dy = \pi$$

5

$$\frac{1}{2} \frac{d}{dt} \left(\frac{1}{2} \frac{d}{dt} \right)$$

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Equation (1)

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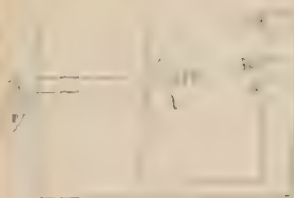
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(2-1)



L

R

$$\delta L + \delta R - \beta \mu \pi = 0$$

$$\beta \delta L = \delta R = 0$$

Page 1

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of 8

$$\delta L + \delta R - \beta \mu \pi = 0$$

8th

$$\delta L + \delta R = \frac{1}{\beta} \pi$$

$$h = \frac{1}{\beta} \left[\frac{1}{2} - \frac{1}{2} \right]$$

$$\delta L + \delta R = \frac{1}{\beta} \pi$$

$$\frac{1}{\beta} \frac{2}{R} = \frac{1}{\beta} \left[\frac{1}{2} - \frac{1}{2} \right] \quad D > 2$$

$$N = \frac{1}{\beta} \left[\frac{1}{2} - \frac{1}{2} \right]$$

$$\delta L + \delta R = \frac{1}{\beta} \pi$$

$$\delta L + \delta R = \frac{1}{\beta} \pi$$

$$\delta L + \delta R = \frac{1}{\beta} \pi$$

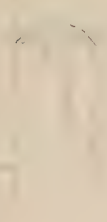


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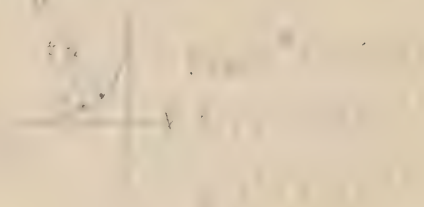


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$$\frac{1}{x} = \frac{1}{x}$$

$$\frac{1}{x} = \frac{1}{x}$$

$$\frac{1}{x} = \frac{1}{x}$$

$$x^2 + 2x + 1 = 0$$

11

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$$x^2 - 4x + 4 = 0$$

$$x = \frac{4 \pm \sqrt{16 - 16}}{2} = 2$$

$$x = 2 \quad \text{... ..}$$

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$$\left(\frac{x}{2} \right)^2 = \left(\frac{x}{2} \right)^2$$

$$x = \frac{1 \pm \sqrt{1 - 1}}{2} = \frac{1}{2}$$

12

1. $\frac{1}{2}$ of the
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the number of plants in the field
was estimated to be 1200
the number of plants in the field
was estimated to be 1200

100

the number of plants in the field
was estimated to be 1200

the number of plants in the field

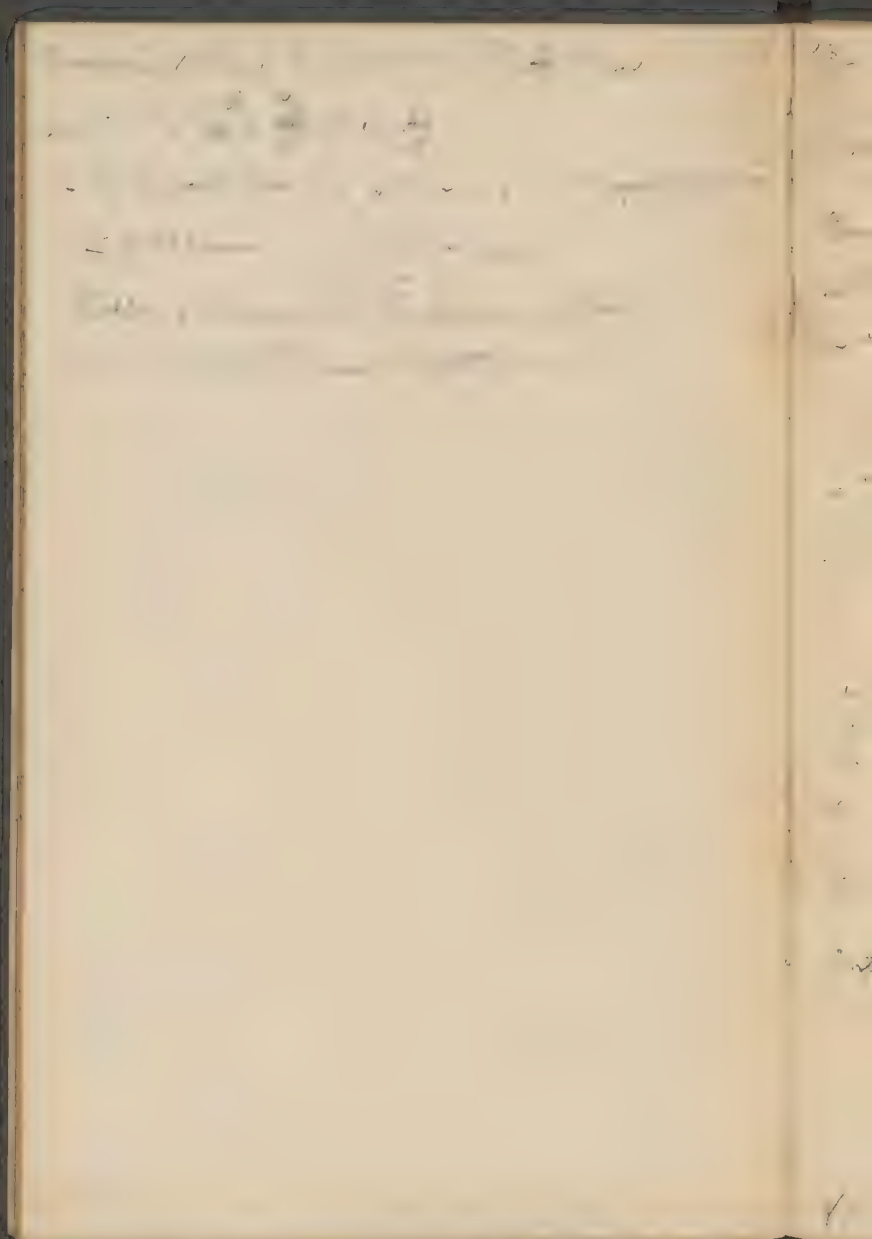
the number of plants in the field

the number of plants in the field

the number of plants in the field



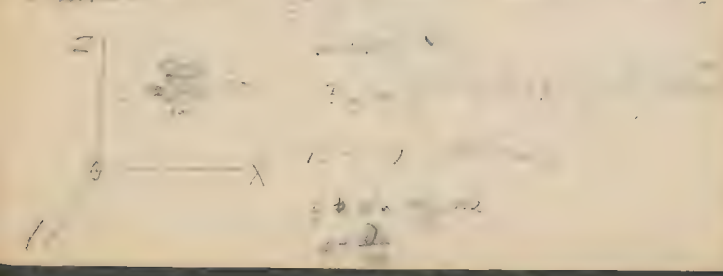
the number of plants in the field
was estimated to be 1200



21. 13

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(1) $\frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = m v \frac{dv}{dt}$

$\frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = m v \frac{dv}{dt}$

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$\frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = m v \frac{dv}{dt}$

$$\begin{aligned}
 11. \quad \frac{\partial z}{\partial t} &= \frac{\partial}{\partial t} (x^2 + y^2 + z^2) = 2x \frac{\partial x}{\partial t} + 2y \frac{\partial y}{\partial t} + 2z \frac{\partial z}{\partial t} \\
 &= 2x \cdot 1 + 2y \cdot 1 + 2z \cdot 1 = 2(x + y + z)
 \end{aligned}$$

$$\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} + \frac{\partial z}{\partial t} = 2(x + y + z)$$

$$\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} + \frac{\partial z}{\partial t} = 2(x + y + z)$$

$$\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} + \frac{\partial z}{\partial t} = 2(x + y + z)$$

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$$\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} + \frac{\partial z}{\partial t} = 2(x + y + z)$$

$$\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} + \frac{\partial z}{\partial t} = 2(x + y + z)$$

$$\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} + \frac{\partial z}{\partial t} = 2(x + y + z)$$

$$- \frac{1}{2} \frac{d}{dt} \int \rho^2$$

$$\rho^2 = \rho \cdot \rho$$

$$\frac{d}{dt} \int \rho^2 = \int \frac{d\rho^2}{dt} = \int \frac{d(\rho \cdot \rho)}{dt} = \int \left(\rho \frac{d\rho}{dt} + \rho \frac{d\rho}{dt} \right)$$

$$= 2 \int \rho \frac{d\rho}{dt}$$

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2. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

$$2 \frac{1}{2} - \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1$$

$$\frac{1}{2} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1$$

$$1 + 1 = 2$$

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

$$\frac{1}{2} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1$$

$$1 + 1 = 2$$

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

$$\frac{1}{2} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1$$

$$1 + 1 = 2$$

$$\frac{1}{2} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1$$

$$M = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

$$C = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

... ..

$$x = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

$$y = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

$$z = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

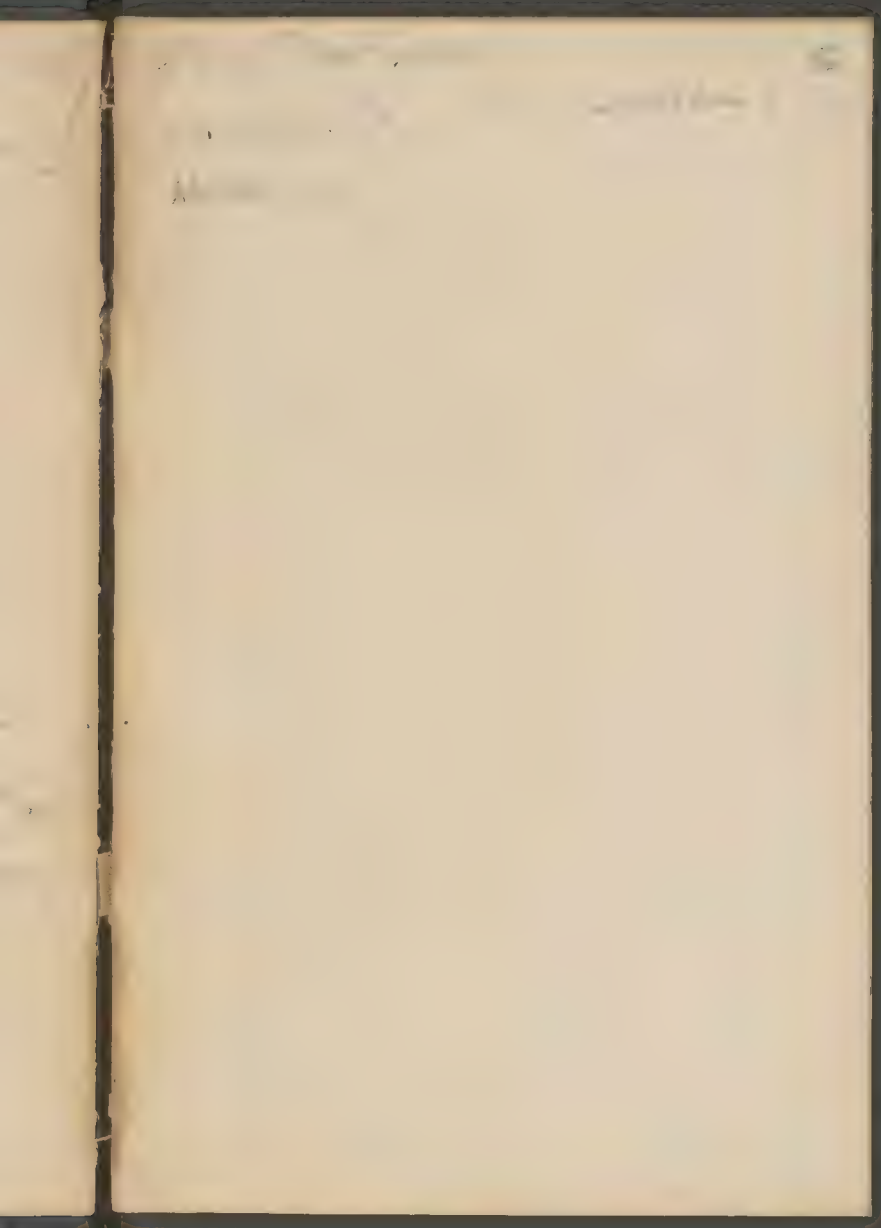
$$a = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

$$b = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

$$c = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

$$\frac{1}{2} = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$

$$\frac{1}{2} = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = 1$$



Let $\mathbf{r} = (x, y, z)$
be a point in space.
Let $\mathbf{r}_0 = (x_0, y_0, z_0)$
be a fixed point in space.

$$r = \sqrt{x^2 + y^2 + z^2}$$

$$r_0 = \sqrt{x_0^2 + y_0^2 + z_0^2}$$

$$r^2 = x^2 + y^2 + z^2$$

$$r_0^2 = x_0^2 + y_0^2 + z_0^2$$

$$r^2 - r_0^2 = x^2 + y^2 + z^2 - x_0^2 - y_0^2 - z_0^2$$

$$r^2 - r_0^2 = (x^2 - x_0^2) + (y^2 - y_0^2) + (z^2 - z_0^2)$$

$$r^2 - r_0^2 = (x - x_0)(x + x_0) + (y - y_0)(y + y_0) + (z - z_0)(z + z_0)$$

$$r^2 - r_0^2 = (x - x_0)(x + x_0) + (y - y_0)(y + y_0) + (z - z_0)(z + z_0)$$

$$r^2 - r_0^2 = (x - x_0)(x + x_0) + (y - y_0)(y + y_0) + (z - z_0)(z + z_0)$$

$$\frac{1}{r} \frac{\partial}{\partial x} = \frac{x}{r^3}$$

$$- \frac{1}{2} \frac{d^2}{dx^2} - \frac{1}{2}$$

$$\psi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{-\frac{1}{2}k^2} e^{ikx} dk = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{-\frac{1}{2}k^2} (\cos(kx) + i \sin(kx)) dk$$

$$= \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{-\frac{1}{2}k^2} \cos(kx) dk$$

using the fact that the integral of an odd function over a symmetric interval is zero, we have

$$\int_{-\infty}^{\infty} e^{-\frac{1}{2}k^2} \cos(kx) dk = 2 \int_0^{\infty} e^{-\frac{1}{2}k^2} \cos(kx) dk = F(x)$$

where $F(x)$ is the function defined by

$$F(x) = \int_0^{\infty} e^{-\frac{1}{2}k^2} \cos(kx) dk$$

$$F'(x) = - \int_0^{\infty} e^{-\frac{1}{2}k^2} k \sin(kx) dk$$

$$= - \frac{1}{2} \int_0^{\infty} e^{-\frac{1}{2}k^2} \sin(kx) dk$$

$$= - \frac{1}{2} \int_0^{\infty} e^{-\frac{1}{2}k^2} \sin(kx) dk = - \frac{1}{2} F(x)$$

$$F''(x) = - \int_0^{\infty} e^{-\frac{1}{2}k^2} k^2 \cos(kx) dk$$

$$= - \frac{1}{2} \int_0^{\infty} e^{-\frac{1}{2}k^2} k^2 \cos(kx) dk$$

$$= - \frac{1}{2} \int_0^{\infty} e^{-\frac{1}{2}k^2} k^2 \cos(kx) dk = - \frac{1}{2} F(x)$$

$$F'''(x) = - \int_0^{\infty} e^{-\frac{1}{2}k^2} k^3 \sin(kx) dk$$

$$= - \frac{1}{2} \int_0^{\infty} e^{-\frac{1}{2}k^2} k^3 \sin(kx) dk$$

1. $\frac{1}{x^2} = x^{-2}$

Derivative of x^{-2} :

$$\frac{d}{dx} x^{-2} = -2x^{-3}$$

$$= -\frac{2}{x^3}$$

$$= -\frac{2}{x^3}$$

$$= -\frac{2}{x^3}$$

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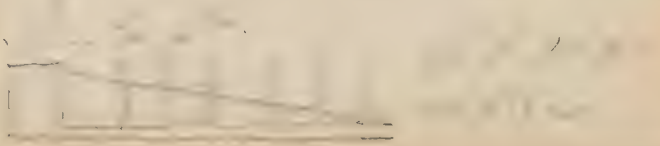
$$= -\frac{2}{x^3}$$

$$= -\frac{2}{x^3}$$

$$= -\frac{2}{x^3}$$

$$= -\frac{2}{x^3}$$

$$= -\frac{2}{x^3}$$



The first part of the paper is devoted to a discussion of the
 general properties of the function $f(x)$ and its derivatives.

In the second part we shall consider the case in which the
 function $f(x)$ is periodic.

The third part of the paper is devoted to a discussion of the
 case in which the function $f(x)$ is not periodic.

In the fourth part we shall consider the case in which the
 function $f(x)$ is not periodic and its derivatives are not bounded.

The fifth part of the paper is devoted to a discussion of the
 case in which the function $f(x)$ is not periodic and its derivatives are not bounded.



$$R = \sqrt{a^2 + b^2}$$

For a point on the circle

$$x = R \cos \theta, y = R \sin \theta$$

For a point on the circle

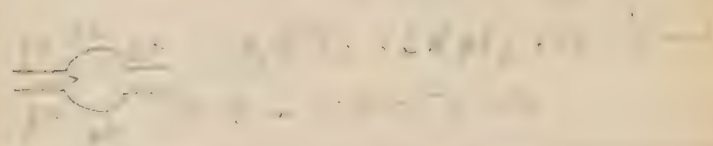
For a point on the circle



For a point on the circle

$$x = R \cos \theta$$

For a point on the circle



For a point on the circle

For a point on the circle

For a point on the circle

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[Faint, illegible handwriting on the right page of the notebook. The text is also too light to transcribe accurately, appearing as a continuation of notes or a separate list.]

$$1/p = \frac{1}{2} + \frac{1}{2} \frac{1}{p}$$

$$1/p = \frac{1}{2} + \frac{1}{2} \frac{1}{p}$$

$$\frac{1}{p} = \frac{1}{2} + \frac{1}{2} \frac{1}{p}$$

$$\frac{1}{p} = \frac{1}{2} + \frac{1}{2} \frac{1}{p}$$

$$\frac{1}{p} = \frac{1}{2} + \frac{1}{2} \frac{1}{p}$$

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$$\frac{1}{p} = \frac{1}{2} + \frac{1}{2} \frac{1}{p}$$

1870-1871

(15)



The first of the year was a very
cold one, and the snow lay
on the ground for several
days. The wind was very
strong, and the snow was
blown in great drifts. The
trees were all bare, and the
ground was very hard. The
people were all dressed in
heavy coats, and the children
were all wearing hats. The
people were all very busy,
and the children were all
playing in the snow. The
people were all very happy,
and the children were all
laughing and playing. The
people were all very kind,
and the children were all
very good. The people were
all very brave, and the
children were all very strong.



9-4

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

$$f(x) = \frac{1}{x^2} = x^{-2}$$

$$f'(x) = -2x^{-3} = -\frac{2}{x^3}$$

$$f''(x) = \frac{6}{x^4}$$

$$f'''(x) = -\frac{24}{x^5}$$

$$f^{(4)}(x) = \frac{240}{x^6}$$

Example 2

$$f(x) = \frac{1}{x^2} = x^{-2}$$

$$f'(x) = -2x^{-3}$$

$$f''(x) = \frac{6}{x^4} = \frac{6x^{-4}}{1} = \frac{6x^{-4} \cdot x^4}{x^4} = \frac{6}{x^4}$$

$$\frac{6}{x^4} + \frac{6}{x^4} = 2\left(\frac{6}{x^4}\right)$$

$$f^{(4)}(x) = \frac{240}{x^6}$$

$$f^{(5)}(x) = -\frac{1440}{x^7}$$



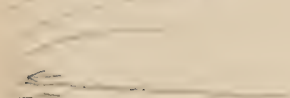
$$y = \sqrt{x}$$

$$\begin{aligned} \frac{dy}{dx} &= \frac{1}{2\sqrt{x}} \\ \frac{d^2y}{dx^2} &= -\frac{1}{4x^{3/2}} \\ &= -\frac{1}{4x\sqrt{x}} \end{aligned}$$

$$y = \sqrt{x}$$

$$y = \sqrt{x}$$

$$\frac{dy}{dx} = \frac{1}{2\sqrt{x}}$$



$$y = \sqrt{x}$$

23

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$$\frac{1}{y} = \frac{1}{y_0} + \frac{1}{y_1}$$

$$\Delta = 0$$

$$V =$$

$$\frac{1}{x} = \frac{1}{x_0} + \frac{1}{x_1}$$

$$\frac{1}{x} = \frac{1}{x_0} + \frac{1}{x_1}$$

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$$\frac{1}{2} = \frac{1}{2} \text{ of } 100 = 50$$
$$\frac{1}{4} = \frac{1}{4} \text{ of } 100 = 25$$

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$$A_{11} = \frac{1}{2} \pi$$

$$A_{22} = \frac{1}{2} \pi$$

$$A_{33} = \frac{1}{2} \pi$$

$$A_{44} = \frac{1}{2} \pi$$

$$A_{55} = \frac{1}{2} \pi$$

$$A_{66} = \frac{1}{2} \pi$$

$$A_{77} = \frac{1}{2} \pi$$

$$A_{88} = \frac{1}{2} \pi$$

$$A_{99} = \frac{1}{2} \pi$$

$$A_{10,10} = \frac{1}{2} \pi$$

$$A_{11,11} = \frac{1}{2} \pi$$

$$A_{12,12} = \frac{1}{2} \pi$$

$$A_{13,13} = \frac{1}{2} \pi$$

$$A_{14,14} = \frac{1}{2} \pi$$

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Handwritten text below the header.

Handwritten text, possibly a date or a specific reference.

Handwritten text, possibly a name or a subject.

Handwritten text, possibly a description or a note.

Small handwritten mark or symbol.

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Jan 1 - 1882

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4} \quad \frac{1}{4} \times \frac{1}{4} = \frac{1}{16} \quad \frac{1}{16} \times \frac{1}{16} = \frac{1}{256}$$

$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$

$$\frac{1}{4} \times \frac{1}{8} = \frac{1}{32}$$

$$\frac{1}{8} \times \frac{1}{32} = \frac{1}{256}$$

$$\frac{1}{32} \times \frac{1}{256} = \frac{1}{8192}$$

$$\frac{1}{256} \times \frac{1}{8192} = \frac{1}{2097152}$$

$$\frac{1}{8192} \times \frac{1}{2097152} = \frac{1}{17179869184}$$

$$\frac{1}{2097152} \times \frac{1}{17179869184} = \frac{1}{35944000000000}$$

$$\frac{1}{17179869184} \times \frac{1}{35944000000000} = \frac{1}{616000000000000000}$$

Jan 2 - 1882

Jan 3 - 1882

Jan 4 - 1882

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[Faint handwritten notes]

1871

$$= 0 \quad \frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = \frac{1}{2} m \frac{d}{dt} (v^2) = \frac{1}{2} m \frac{d}{dt} (v_x^2 + v_y^2 + v_z^2)$$

$$f(x) = \sqrt{1-x^2} \quad \text{for } x \in [-1, 1]$$

$$f'(x) = \frac{-x}{\sqrt{1-x^2}} \quad \text{for } x \in (-1, 1)$$

$$\frac{d}{dx} \int_{-1}^x \sqrt{1-t^2} dt = \sqrt{1-x^2}$$

$$f'(x) = \sqrt{1-x^2}$$

$$f''(x) = \frac{-x}{\sqrt{1-x^2}}$$

$$f'''(x) = \frac{1-x^2}{(1-x^2)^{3/2}}$$

$$f''(x) = \frac{-x}{\sqrt{1-x^2}}$$

$$f'''(x) = \frac{1-x^2}{(1-x^2)^{3/2}}$$

$$f''(x) = \frac{-x}{\sqrt{1-x^2}}$$

$$f'''(x) = \frac{1-x^2}{(1-x^2)^{3/2}}$$

$$f''(x) = \frac{-x}{\sqrt{1-x^2}}$$

$$f'''(x) = \frac{1-x^2}{(1-x^2)^{3/2}}$$

$$\left(1 + \frac{a}{x}\right)^x = e^a$$

$$\frac{1}{1+x} = 1 - x + x^2 - x^3 + \dots$$

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$$

$$\ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \dots$$

For small x, $e^x \approx 1 + x$

The exponential function is the only function that is equal to its own derivative.

It is also the only function that is its own inverse.

The exponential function is the only function that is its own second derivative.

$$1991 - 2000$$

$$1991 - 2000 = 9 \text{ years}$$

$$1. A = \frac{1}{2} \times \text{base} \times \text{height}$$

$$2 \times 3 = 6$$

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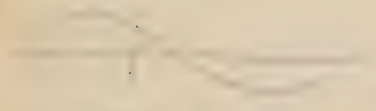
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The first part of the paper is devoted to a
 discussion of the general principles of the
 theory of the motion of a particle in a
 fluid. It is shown that the motion of a
 particle in a fluid is determined by the
 forces acting on it, and that the motion
 is governed by the laws of mechanics.
 The second part of the paper is devoted to
 a discussion of the motion of a particle in
 a fluid, and to the determination of the
 forces acting on it. It is shown that the
 motion of a particle in a fluid is deter-
 mined by the forces acting on it, and that
 the motion is governed by the laws of
 mechanics.



The third part of the paper is devoted to
 a discussion of the motion of a particle in
 a fluid, and to the determination of the
 forces acting on it. It is shown that the
 motion of a particle in a fluid is deter-
 mined by the forces acting on it, and that
 the motion is governed by the laws of
 mechanics.

6. 1. 1914

$$\frac{1}{2} \frac{d}{dt} \left(\frac{1}{2} \frac{d^2 x}{dt^2} \right) = \frac{1}{2} \frac{d^3 x}{dt^3}$$

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$$\frac{1}{2} \frac{d}{dt} \left(\frac{1}{2} \frac{d^2 x}{dt^2} \right) = \frac{1}{2} \frac{d^3 x}{dt^3}$$

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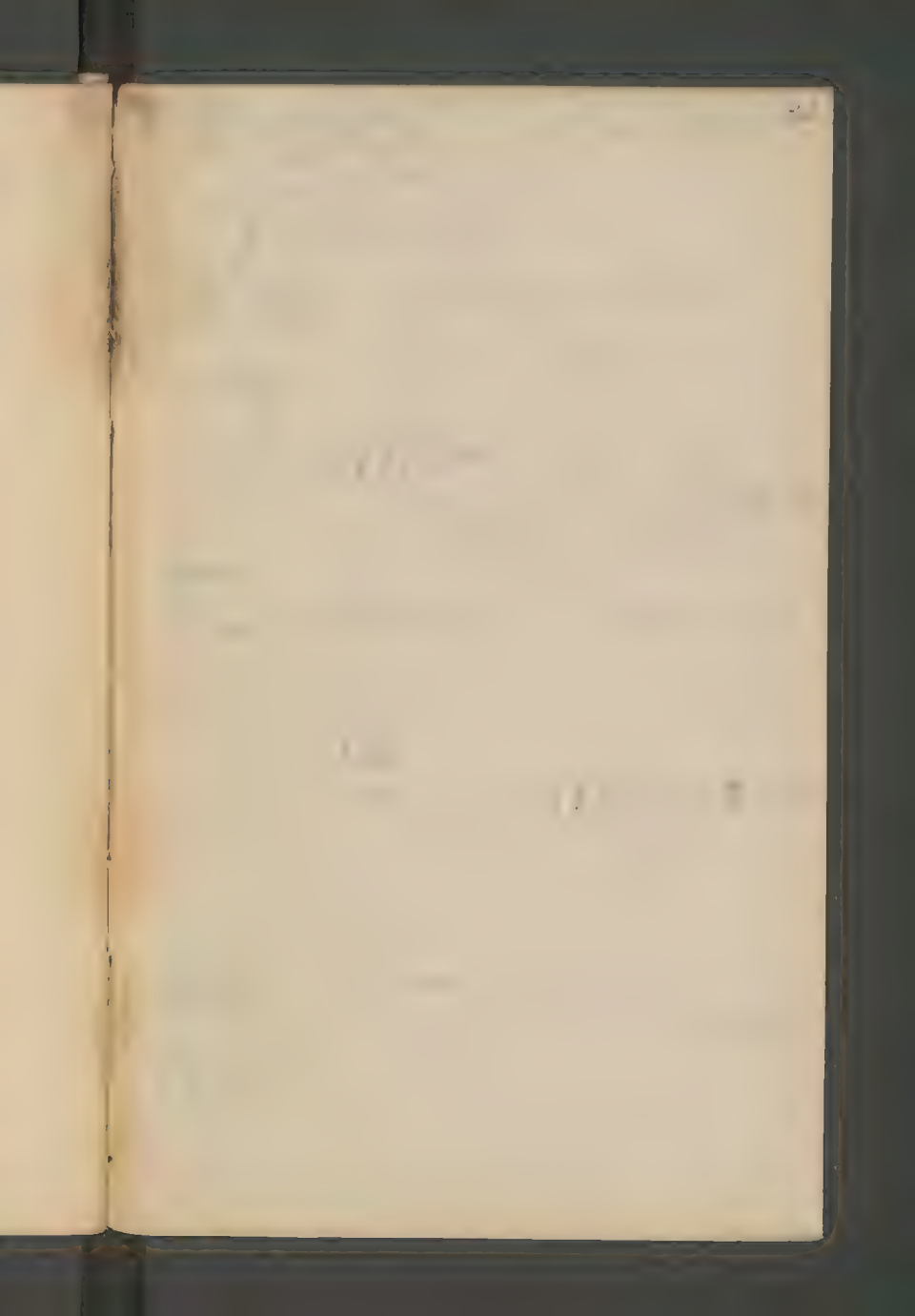
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[The page contains extremely faint, illegible text, likely bleed-through from the reverse side. The text is arranged in several horizontal lines across the page.]

$$\frac{\partial u}{\partial r} = \text{const. } B.J. \text{ für } r \rightarrow \infty \text{ von } f(r) \rightarrow 0$$

$$a = \frac{p_1 - p_0}{l}$$

$$u = \frac{\partial}{\partial r} \left(r \frac{\partial u}{\partial r} \right) = ar$$

32

$$r \frac{\partial u}{\partial r} = \frac{ar^2}{2} + b$$

$$\frac{\partial u}{\partial r} = a \frac{r}{2} + \frac{b}{r}$$

$$u = a \frac{r^2}{4} + b \log r + c$$

$$u = \frac{ar^2}{4} + c$$

$$b = 0$$

$$u = \frac{p_1 - p_0}{4 \mu l} \frac{r^2}{4} + c$$

$$p_0 \text{ bei } r=0$$

$$r=R \quad | \quad u=u_0$$

$$u = \frac{ar^2}{4} + c$$

$$c = \frac{R^2}{4} - \frac{u_0}{a} \quad \text{mit } u \text{ an } r=R$$

$$\textcircled{+} \int_0^R 2\pi r dr = \frac{2\pi R^2}{2} = \pi R^2 \quad \text{um const. } \frac{1}{\mu}$$

$$Q = 2\pi \frac{p_1 - p_0}{4 \mu l} \int_0^R \left(\frac{R^2}{2} - \frac{r^2}{4} \right) dr$$

$$= \frac{p_1 - p_0}{2 \mu l} \pi \left(\frac{R^2}{2} - \frac{R^2}{4} \right)$$

$$Q = \pi \frac{p_1 - p_0}{8 \mu l} R^4$$

Rechnung für $\mu = 0.01906$

$$u = \frac{a}{4} \left(R^2 - \frac{r^2}{4} \right) \quad \text{für } r=R \quad u=u_0$$



